

ATTACHMENT D

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THE CHEMISTRY OF CHLORINE DIOXIDE

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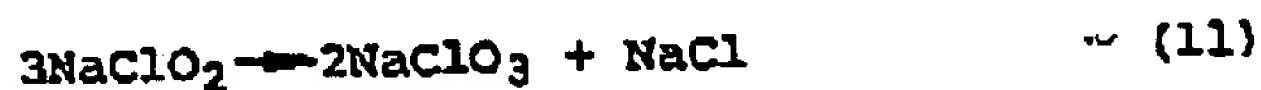
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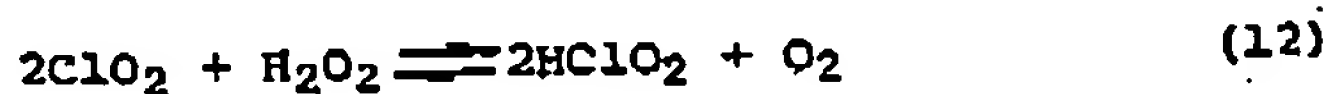
D. Decomposition of Alkaline
NaClO₂ Solutions

Mildly alkaline solutions of sodium chlorite are stable for periods up to a year, and even with prolonged boiling no decomposition occurs if light is excluded (24, 25, 59, 97, 220). In hot, strongly alkaline solution, chlorine dioxide is not formed but chlorate ion is the principal product of the decomposition (22, 193, 226).

E. Decomposition of NaClO₂ in
Neutral Solutions

As the pH is lowered, a chlorite ion solution becomes less stable. Neutral solutions of sodium chlorite are reasonably stable if they are kept away from light and heat, but a solution will decompose slowly if heated (22, 97, 162, 220). As in the case of the alkaline solution, the decomposition of a neutral solution of the chlorite produces no chlorine dioxide; only chlorate ion and chloride ion are formed (8, 28, 220, 226).

Curti and Montaldi (36) reportedly have prepared approximately neutral solutions of chlorous acid by the following reaction:



The equilibrium constant for Eq. 12 is 3.2×10^{-6} at